Space Weather Forecast

Issued on Thursday 17 October 2024 at 01:17 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate class flares. Increasing Chance of G1 Minor Geomagnetic Storms days 1-3 (17-19 Oct).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate with several Moderate class flares observed through the period, peaking at 16/0323 UTC.

There are currently six active regions on the visible disc. Two in the southwest quadrant form a coupled pair of sunspots and are the most prominent spot groups on the disc. Both showing signs of fading or simplifying. A spot in the north near centre disk has seen the most notable change in recent hours, increasing in both size and complexity with an increasingly complex magnetic structure. The three remaining regions appear magnetically simple, and generally stable.

No Earth-directed coronal mass ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar wind speeds varied between background and slightly elevated levels. The Interplanetary Magnetic Field started moderate then became weak. The north-south component varied in direction throughout, but was mostly weak and southward. Geomagnetic activity was Quiet to Unsettled (Kp 2-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) were at background, with no Solar Radiation Storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to Low, with a chance of further Moderate-class flares, and a slight chance of isolated Strong-class flares.

Solar Wind / Geomagnetic Activity: No Earth directed coronal mass ejections feature in the forecast. Ongoing slightly elevated solar winds are expected to gradually ease during day 1 (17 Oct). There is then the potential for elevated winds to develop from late day 1 until day 3 (17-19 Oct) onwards, due to a high speed stream from the large coronal hole in the northwest of the disc.

Overall, geomagnetic activity is expected to start Quiet to Unsettled (Kp 1-3), with an increasing chance of Active to G1/Minor Geomagnetic storms (Kp 4-5) later day 1 to day 3 (17-19 Oct), due to

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the high speed stream from the large coronal hole in the northwest.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is due to remain at background, with no Solar Radiation Storms expected.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	25	30	30	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	50	50	50	40
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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